

-10-

REMARKS

In response to the Office Action mailed May 31, 2006, the Applicant respectfully requests reconsideration. To further the prosecution of this Application, the Applicant submits the following remarks and has added new claims. The claims as now presented are believed to be in allowable condition.

Claims 1-31 were pending in this Application. Claims 1, 6-13, 18-24, and 28-31 were considered and claims 2-5, 14-17, and 25-27 were withdrawn from consideration. By this Amendment, claims 32 and 33 have been added. Accordingly, claims 1-33 are now pending in this Application. Claims 1, 13, and 28 are independent claims.

Allowed Claims

Claims 9-10, 21-22, and 30-31 were objected to as being dependent on a rejected base claim but were deemed allowable if rewritten in independent form to include all of the limitations of the base claim and any intervening claims. The Applicant reserves the right to amend the claims as described above until the Applicant receives a reply to Applicant's request for reconsideration of claims 1, 6-8, 11-13, 18-20, 23, 24, 28, and 29.

Rejections under §102

Claims 1, 6-8, 11-13, 18-20, 23, 24, 28, and 29 were rejected under 35 U.S.C. §102(e) were rejected under 35 U.S.C. §102(e) as being anticipated by U.S. Patent No. 6,909,052 to Haug et al., hereinafter Haug. The Applicant respectfully traverses each of these rejections and requests reconsideration. The claims are in allowable condition.

The Applicant's independent claims 1 and 13 have been rejected. Taking independent claim 1 as an example, the claim relates to a circuit board that includes a first signal layer having a signal conductor and a contact pad in

electrical communication with the signal conductor. The circuit board also includes a second signal layer substantially parallel to the first signal layer where the second signal layer has a conductive plane defining an opening. The opening is substantially aligned with the contact pad and the opening is configured to minimize a signal reflection of a signal transmitted through the signal conductor and across the contact pad. The circuit board also includes a nonconductive layer disposed between the first signal layer and the second signal layer.

Haug relates to techniques for making a circuit board. In Haug, a circuit board 26 includes multiple circuit board layers 28 which are sandwiched together into an integrated, rigid board. The layers 28 include a signal layer 30, another signal layer 32 and yet another signal layer 34. Also, as shown in FIG. 1, the signal layer 30 includes a set of conductors 46 (e.g., outer-layer surface traces). The set of conductors 46 includes a first set of differential traces 48 and a second set of differential traces 50. As recited by Haug, the differential pairs of traces 48, 50 have different impedances thus making the circuit board well-suited for accommodating circuitry that requires the different impedances in order to minimize signal reflection and provide robust signal integrity (Column 5, lines 5-9).

As further disclosed by Haug, the circuit board 26 includes a set of plated through-holes (PTHs) 66 that extend from a top surface 68 of the circuit board 26 to a bottom surface 70 of the circuit board 26 through the circuit board layers 28. The plated through-holes 66 electrically connect the conductive plane 52 of the signal layer 32 with the conductive region 56 of the signal layer 34. Column 5, lines 27-33. Conductive planes (e.g., the conductive plane 60 of the signal layer 42) which do not electrically connect with the plated through-holes 66 define anti-pads 76 (i.e., non-conductive areas) that surround the plated through-holes 66

thus avoiding direct contact with the metallic shells 72 of the plated through-holes 66. Column 5, lines 41-46.

With respect to the rejection of independent claims 1 and 13, the Office Action asserts that the claims are rejected as being anticipated by Haug. On page 2, paragraph 1, the Office Action indicates that the term “configured to,” as used in the Applicant’s claims is considered as well defined as an intended use limitation. The Office Action further states that “[i]t has been held that the recitation that an element is “configured to” perform or is “capable of being” performing a function is not a positive limitation but only requires the ability to perform, see *In re Venezia*, 189 USPQ 149 (CCPA 1976).” As such, the Office Action indicates that Haug discloses a second signal layer substantially parallel to the first signal layer, the second signal layer having a conductive plane defining an opening, the opening substantially aligned with the contact pad, and the opening **configured to** (capable of being) minimize a signal reflection of a signal transmitted through the signal conductor and across the contact pad.

The Applicant respectfully asserts that the Office Action has misconstrued *In re Venezia* with respect to claims 1 and 13.

In *In re Venezia*, the United States Court of Customs and Patent Appeals (court) reviewed a decision of the Patent and Trademark Office Board of Appeals (board) affirming the rejections of claims 31 through 36 in application serial No. 31,500, filed April 24, 1970, for “Method of Splicing High Voltage Shielded Cables and Splice Connector Therefor.” In its reversal of the board’s decision, the court stated that claims 31 through 36 of the application “precisely define a group or “kit” of interrelated parts. These interrelated parts may or may not be later assembled to form a completed connector.”¹ Furthermore, the court held that

¹ *In re Venezia*, 530 F.2d 956, 958 (CCPA 1976).

although the claims before us contain some language which can be labeled "conditional," this language, rather than describing activities which may or may not occur, **serves to precisely define present structural attributes of interrelated component parts** of the "kit," such that a later assembly of the "kit" of parts may be effected (emphasis added).²

Therefore, in light of the holding of *In re Venezia*, the Applicant asserts that the language "the opening configured to minimize a signal reflection of a signal transmitted through the signal conductor and across the contact pad" of claims 1 and 13, serves to define the structural attributes and relationship between the contact pad of the first signal layer and the second signal layer.

Claims 1 and 13 recite, in part, "a first signal layer having a signal conductor and a contact pad in electrical communication with the signal conductor" and "a second signal layer substantially parallel to the first signal layer, the second signal layer having a conductive plane defining an opening, the opening substantially aligned with the contact pad, and the opening configured to minimize a signal reflection of a signal transmitted through the signal conductor and across the contact pad." As indicated in the Specification on page 10, line 25 through page 11, line 11, formation of the opening within the second signal layer relative to the contact pad removes a portion of the second signal layer relative to the contact pad. This physical structure of, and relative positioning between, the contact pad of the first signal layer and the opening of the second signal layer, reduces capacitive coupling between the contact pad and the second signal layer and minimizes signal reflection of the signal transmitted through the signal conductor and across the contact pad.

Therefore, the "opening configured to minimize a signal reflection of a signal transmitted through the signal conductor and across the contact pad"

² *In re Venezia*, 530 F.2d 956, 960 (CCPA 1976).

language of claims 1 and 13 further defines the structural attributes and relationship between the contact pad of the first signal layer and the second signal layer and does not describe activities which are capable of being performed, as indicated by the Office Action. As such, following the proper application of the holding of *In re Venezia*, because the “configured to” language of independent claims 1 and 13 define the structural relationship between the contact pad of the first signal layer and the opening defined in the second signal layer, the phrase “configured to” cannot be interpreted as “capable of being performed.”

Returning to the rejection of claims 1 and 13, the Office Action states on page 2 that claims 1 and 13 are rejected under 35 U.S.C. §102(e) as being anticipated by Haug. However, interpreting the phrase “configured to” in claims 1 and 13 in light of *In re Venezia*, claims 1 and 13 are not anticipated by Haug because Haug does not teach or suggest all of the limitations of claims 1 and 13. For example, Haug does not teach or suggest an opening substantially aligned with a contact pad where the opening is configured to minimize a signal reflection of a signal transmitted through the signal conductor and across the contact pad, such as claimed by the Applicant

As recited in Haug, conductive planes that do not electrically connect with the plated through-holes 66 define anti-pads 76 (i.e., non-conductive areas) that surround the plated through-holes 66. There is no teaching or suggestion in Haug that the anti-pads “are configured to minimize a signal reflection of a signal transmitted through the signal conductor and across the contact pad” as claimed by the Applicant. The anti-pads merely “avoid direct contact with the metallic shells 72 of the plated through-holes 66.”

For the reasons stated above, independent claims 1 and 13 patentably distinguish over the cited prior art, and the rejection of claims 1 and 13 under 35

-15-

U.S.C. §102(e) should be withdrawn. Accordingly, claims 1 and 13 are in allowable condition. Furthermore, claims 6-13 depend from and further limit claim 1 and claims 18-24 depend from and further limit claim 13. Claims 6-13 and 18-24 are in allowable condition for at least the same reasons.

The Office Action also rejected claim 28 as being anticipated by Haug. Claim 28 relates to a circuit board and recites, “a first signal layer having a signal conductor means and a contact pad means in electrical communication with the signal conductor,” “a second signal layer substantially parallel to the first signal layer, the second signal layer having a conductive plane defining an opening means for substantially normalizing an impedance of the signal conductor means and an impedance of the contact pad means, the opening means substantially aligned with the contact pad means, and the opening means minimizing a signal reflection of a signal transmitted through the signal conductor means and across the contact pad means,” and “a nonconductive layer disposed between the first signal layer and the second signal layer.”

Claim 28 is not anticipated by Haug because Haug does not teach or suggest all of the limitations of claim 28. For example, Haug does not teach or suggest a second signal layer substantially parallel to the first signal layer, the second signal layer having a conductive plane defining an opening means for substantially normalizing an impedance of the signal conductor means and an impedance of the contact pad means, the opening means substantially aligned with the contact pad means, and the opening means minimizing a signal reflection of a signal transmitted through the signal conductor means and across the contact pad means, such as claimed by the Applicant.

As recited in Haug, conductive planes that do not electrically connect with the plated through-holes 66 define anti-pads 76 (i.e., non-conductive areas) that surround the plated through-holes 66. There is no teaching or suggestion in

Haug that the anti-pads function as “minimizing a signal reflection of a signal transmitted through the signal conductor means and across the contact pad means” as claimed by the Applicant. The anti-pads merely “avoid direct contact with the metallic shells 72 of the plated through-holes 66.”

For the reasons stated above, independent claim 28 patentably distinguishes over the cited prior art, and the rejection of claim 28 under 35 U.S.C. §102(e) should be withdrawn. Accordingly, claims 1 and 13 are in allowable condition. Furthermore, claims 29-31 depend from and further limit claim 28 and are in allowable condition for at least the same reasons.

Additionally, it should be understood that the dependent claims recite additional features which further patentably distinguish over the cited prior art. For example, claim 6 recites the contact pad comprising a pad center axis and the opening, defined by the conductive plane, comprising an opening center axis, the pad center axis substantially perpendicular to the first signal layer, the opening center axis substantially perpendicular to the second signal layer, and the pad center axis and the opening center axis oriented substantially parallel and defining an offset distance between the pad center axis and the opening center axis. This feature is not taught or suggested by the cited prior art. If the rejection of claim 6 is to be maintained, the Applicant respectfully requests that it be pointed out with particularity where the cited prior art teaches the pad center axis and the opening center axis oriented substantially parallel and ***defining an offset distance between the pad center axis and the opening center axis.***

Newly Added Claims

Claims 32 and 33 have been added and are believed to be in allowable condition. Claim 32 depends from claim 1 and claim 33 depends from claim 13. Support for claims 32 and is provided within the Specification, for example, in Figs. 4 and 7. No new matter has been added.

-17-

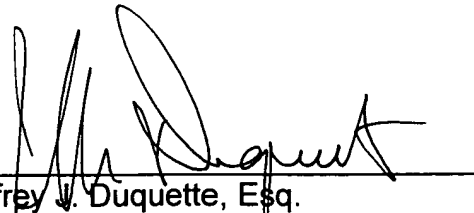
Conclusion

In view of the foregoing remarks, this Application should be in condition for allowance. A Notice to this affect is respectfully requested. If the Examiner believes, after this Amendment, that the Application is not in condition for allowance, the Examiner is respectfully requested to call the Applicants' Representative at the number below.

The Applicant hereby petitions for any extension of time which is required to maintain the pendency of this case. If there is a fee occasioned by this Amendment e, including an extension fee, that is not covered by an enclosed check, please charge any deficiency to Deposit Account No. 50-3661.

If the enclosed papers or fees are considered incomplete, the Patent Office is respectfully requested to contact the undersigned collect at (508) 616-2900, in Westborough, Massachusetts.

Respectfully submitted,



Jeffrey V. Duquette, Esq.
Attorney for Applicant(s)
Registration No.: 45,487
Bainwood, Huang & Associates, L.L.C.
Highpoint Center
2 Connector Road
Westborough, Massachusetts 01581
Telephone: (508) 616-2900
Facsimile: (508) 366-4688

Attorney Docket No.: 1004-059

Dated: August 31, 2006